DRAFT

Washington State Status Report for the Common Loon

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The Washington Department of Fish and Wildlife maintains a list of endangered, threatened and sensitive species (Washington Administrative Codes 232-12-014 and 232-12-011, Appendix A). In 1990, the Washington Fish and Wildlife Commission adopted listing procedures developed by a group of citizens, interest groups, and state and federal agencies (Washington Administrative Code 232-12-297, Appendix B). The procedures include how species listing will be initiated, criteria for listing and de-listing, public review and recovery and management of listed species.

The first step in the process is to develop a preliminary species status report. The report includes a review of information relevant to the species' status in Washington and addresses factors affecting its status including, but not limited to: historic, current, and future species population trends, natural history including ecological relationships, historic and current habitat trends, population demographics and their relationship to long term sustainability, and historic and current species management activities.

The procedures then provide for a 90-day public review opportunity for interested parties to submit new scientific data relevant to the status report, classification recommendation, and any State Environmental Policy Act findings. During the 90-day review period, the Department holds public meetings to answer questions and take comments. At the close of the comment period, the Department completes the final status report and listing recommendation for presentation to the Washington Fish and Wildlife Commission.

This is the **draft** status report for the common loon. Submit written comments on this report **before September 16, 1999** to:

Endangered Species Program Manager
Washington Department of Fish and Wildlife
600 Capitol Way N
Olympia WA 98501

The Department will revise the draft and prepare a final status report and listing recommendation for release before November 1, 1999.

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EXECUTIVE SUMMARY

The common loon is currently a rare breeder, but a common migrant and wintering species, in Washington. Fewer than 10 nests are recorded in a typical year, about half of which are located on water bodies that are relatively inaccessible to people. Little information exists on the former distribution and abundance of common loons in Washington. Across North America, however, the common loon range contracted with the westward expansion of European settlers.

Shoreline development, disturbance by human activities, and directed persecution toward this fish-eating species likely caused abandonment of some lakes where loons once nested. While human intrusions have not ceased, allowances for loons sometimes are made; floating nest platforms, access restrictions, and educational campaigns each have helped the current loon population to become somewhat stable at certain sites. Increased development and recreational pressure at sensitive nesting lakes must be actively managed to prevent the loss of nesting loons.

In the midwestern and northeastern United States and adjacent Canada, this species is threatened by lead and mercury poisoning. While neither toxicant is known to be prevalent at Washington's loon nesting lakes, the species' susceptibility points to a need for proactive management of heavy-metal sources here. Preliminary data indicates mercury concentrations are low in loons nesting in Washington.

Although the common loon has been little studied in Washington, biologists have long been concerned about the health of the state population. Protective designations have been suggested since the early 1980's, but no action has been taken. Under current conditions, the loon population is not in imminent danger of extirpation. It is, however, likely to become endangered in the foreseeable future without cooperative management and removal of threats. The Department, therefore, recommends the common loon be listed as a State Threatened species.

INTRODUCTION

The common loon has been the subject of intensive study and management elsewhere in its range. A recent thorough review (McIntyre and Barr 1997) provides detailed information on most aspects of common loon life history and human interactions. A recent annotated bibliography (McIntyre and Cutler 1995) offers additional remarks and resources on the common loon. Because these exhaustive references exist, information in this review is, as much as possible, specific to Washington.

TAXONOMY

The common loon (*Gavia immer*) is one of five members of the family Gaviidae and the order Gaviiformes (American Ornithologists' Union 1998). It was first described by Brünnich in 1764. The species is known as great northern diver in the Old World. It and the yellow-billed loon (*Gavia adamsii*) constitute a superspecies (American Ornithologists' Union 1998).

DESCRIPTION

Common loons typically measure 66 to 91 cm (26 to 36 in), with a 130-140 cm (50 to 55 in) wingspan, and weigh 2500 to 6100 g (5.5 to 13.5 lb). Males are generally larger than females and territorial individuals tend to be larger than those not on territories (McIntyre and Barr 1997). Both male and female common loons bear striking black-and-white plumage during the breeding season. In winter, loons acquire a gray-above, white-below basic plumage. Subadult loons may remain in basic plumage all year.

During eastern Washington summers, many lakes support red-necked grebes (*Podiceps grisegena*), which can superficially resemble loons and are sometimes called "loons" locally (Richards and Musche 1985).

GEOGRAPHICAL DISTRIBUTION

North America

Common loons breed across Alaska, Canada, and most northern-tier states. They winter coastally from the Aleutians to Mexico and from Newfoundland to the Gulf Coast (American Ornithologists' Union 1998).

Washington

Common loons have nested recently in Ferry, Okanogan, Chelan, Whatcom, and King counties (Table 1). “Probable” nesting has recently been reported in Grays Harbor and Pend Oreille counties (Smith et al. 1997). Common loons winter primarily on coastal and inland marine waters, but are also found in low numbers on unfrozen reservoirs, rivers, and lakes in the interior.

NATURAL HISTORY

Reproduction

The following information is summarized from Evers (1993a) and McIntyre and Barr (1997).

> Common loons are thought to breed no earlier than age 4 yr, and possibly as late as age 7 yr, but they breed annually thereafter. Mate fidelity is high, but mate switching within and between seasons is not uncommon. Upon returning to nesting lakes, common loons quickly commence nesting; territories are established and eggs laid within about 2 weeks after arrival. Individuals often return to the same territory year after year. Common loons usually lay 2 eggs and incubate them about 28 days. If a full clutch is lost early loons will re-lay, but partial clutches and failures after hatching are not followed by second clutches.
>
> Chicks are down-covered at birth and are semi-precocial. They enter the water and swim with parents just hours after hatching. To reduce heat loss through their feet, young chicks climb onto a parent’s back for brooding until they reach about age 16 days. Chicks are initially dependent upon adults for food, but catch half their own prey by age 8 wk and most of their prey by age 11 wk. First flights occur when chicks attain age 11-13 wk. Young become independent sometime between mid September and mid November, depending when they hatched.

Data on nesting chronology in Washington are limited. The date of first egg laying varies, likely depending on weather, pair bond formation, and nest site availability; the latter is sometimes affected by water levels, particularly on reservoirs. Since 1989, more than 40 laying dates have been documented. Laying has occurred between 4 April and 20 May, with most occurring between the last week in April and 11 May (R. Spencer, unpublished data). Hatching occurs as early as mid May, but generally occurs the last week of May or early June (R. Spencer, unpublished data). Chicks have been observed in Ferry County on 4 June (Richards and Musche 1985), in Whatcom County on 8 June (WDFW files), and in Okanogan County on 13 June (WDFW files), 19 June (WDFW files) and 22 June (Rogers 1997). In King County, egg hatching and chicks have been observed between 14 May and 13 June, with the majority seen between 20 and 30 May. Juvenile loons are likely to remain on natal lakes until at least August or September,

but have been observed as late as October on lakes and reservoirs in western Washington (R. Spencer and D. Paige, unpublished data).

Hatching success (proportion of nests with at least one hatched egg) was 0.69 at nine Washington sites between 1989 and 1993 (R. Spencer, unpublished data). Productivity, the average number of young fledged per nesting pair per year, was 0.77 during the same period (R. Spencer, unpublished data). Elsewhere in the loon's range, productivity has ranged from near zero to just over 1 (McIntyre and Barr 1997). Average productivity of 0.535 young per pair per year characterized stable populations in northern Saskatchewan (Yonge 1981, cited in McIntyre and Barr 1997). Hatching success and productivity vary due primarily to predation, human disturbance, weather, water level fluctuations, and unknown causes (R. Spencer, unpublished data). Productivity also depends in part upon lake size and food availability; smaller lakes or lakes with insufficient prey reduce productivity, while larger lakes supporting abundant prey enhance productivity. Lake acidity may also depress productivity (McIntyre and Barr 1997).

Mortality

Maximum longevity for the common loon is thought to be at least 25 years, although none older than 10 years have been documented (McIntyre and Barr 1997). Sources of mortality on breeding lakes have been summarized by McIntyre and Barr (1997). Loon mortality in the marine environment, where loons are especially vulnerable during their mid-winter flightless period, has been reviewed by Spitzer (1995).

Natural sources of mortality include predation (of young, in particular), death due to injuries sustained in territorial conflicts, botulism, and parasitic infections (Franson and Cliplef 1993, McIntyre and Barr 1997). Avian predators include eagles, corvids, and gulls, while mammalian predators include coyotes, raccoons, and mustelids (McIntyre and Barr 1997). The only documented predation events in Washington involved eggs probably taken by a bald eagle and a river otter.

Human-related mortality factors include drowning in fish nets and traps, contamination by spilled oil, poisoning by mercury or lead, collisions with motorized watercraft, and shooting (Franson and Cliplef 1993, McIntyre and Barr 1997). Human disturbance can promote predation on eggs or chicks (McIntyre and Barr 1997). (See "Factors affecting continued existence", page 12.)

Little information is available on loon mortality in Washington. Two common loons were among 856 dead, oiled birds recovered on the west coast of Vancouver Island after the 1988 *Nestucca* oil spill off Grays Harbor (Rodway et al. 1989). One nest was lost when high winds created waves that washed over it, spilling the eggs into the water (R. Spencer, unpublished observation). Some chicks have died when cold rain and high winds have occurred within the first week after hatching (R. Spencer and D. Paige, unpublished data).

Migration

Little information is available on migration of loons that nest in Washington. Most migrating loons seen in the state are traveling to and from Canada or Alaska. Adults begin to move toward breeding lakes during late March. [Males from established breeding lakes may return first, as early as mid to late March, to maintain and defend nest sites (R. Spencer, personal observation).] Peak movement occurs in mid to late April and stragglers are present into early May (WDFW files). A few young loons migrate in June (Campbell et al. 1990, McIntyre and Barr 1997). Sub-adult loons often remain in the marine environment throughout the summer. A late movement of 275 common loons was reported at Ocean Shores on 11 June 1977.

After nesting, most common loons leave breeding lakes to winter on marine waters, although some loons use bodies of fresh water during winter. Post-breeding migration in Washington is probably similar to the event in British Columbia, where movement begins in late August and continues through November, with a peak in early October (Campbell et al. 1990).

Food

Common loons eat fish, primarily, but also eat other aquatic animals (McIntyre and Barr 1997). Crustaceans can be important when fish are not plentiful or where water is murky, making fish pursuit difficult (Barr 1973, cited in McIntyre and Barr 1997). Prey items frequently weigh 10 to 70 g, though much larger prey are sometimes taken (McIntyre and Barr 1997).

A variety of fish species are eaten by common loons (McIntyre and Barr 1997), but little is known of their food choices in Washington. Fish identified during the preparation of two specimens (Slater Museum numbers PSM 21055, 22482) salvaged from marine waters of Skagit County in November were *Leptocottus armatus*, *Raja binoculata*, *Oligocottus maculosus*, pleuronectid, and sole. In October at a lake on the Queen Charlotte Islands, British Columbia, all common loon prey identified (n=84) were three-spined sticklebacks (*Gasteropteus oculeatus*), with lengths estimated to be 50 to 70 mm (Reimchen and Douglas 1980).

Although loons are found on lakes supporting trout and other game fish, loons may only prey upon them opportunistically. Barr (1996) suggested that native trout are more secretive and wary than hatchery stock, which may be especially vulnerable when recently planted and unacclimatized.

Behavior

Foraging.—Common loons begin to forage after dawn and hunt intermittently until late afternoon or near sunset (McIntyre and Barr 1997). In fall and winter, they spend more than half the day foraging, but when incubating or caring for young they hunt less (McIntyre and Barr 1997). Loons search for fish by peering under water while at the surface. They also dive in search

of prey. Average dive duration has varied among studies, ranging from about 30 sec to >1 min (Reimchen and Douglas 1980). Dives exceeding 2 minutes have been documented in western Washington (R. Spencer, unpublished data). Time spent below the surface reflects time to search, pursue, capture, and manipulate prey. Most prey are swallowed under water.

Interspecific relationships.—Interspecific aggression is strong in loons on breeding territories, where adult loons will attack and kill other loons, geese, and ducks, as well as mammals (Kirkham and Johnson 1988). Most attacks on waterfowl are directed toward goslings and ducklings.

Intraspecific relationships.—Common loons often form small feeding flocks in autumn and winter (McIntyre and Barr 1983). When nesting, however, common loons are usually highly territorial. This behavior is somewhat variable; Strong and Bissonette (1988) and Evers (1993a) have noted a lack of aggressive encounters on lakes shared by >1 pair of nesting loons. Individuals or groups of loons often roost at night over deep water away from shorelines (McIntyre 1978, McIntyre and Barr 1983, McIntyre and Barr 1997).

Territoriality.—Common loons defend nesting, feeding, and chick-rearing territories (McIntyre and Barr 1997). Fights are common when loons defend breeding territories. Territorial behaviors, which include water treading and calling while chasing, are often misconstrued as courtship (Sjölander and Ågren 1972, McIntyre and Barr 1997). In contrast, courtship displays are simple and of low intensity (Sjölander and Ågren 1972, McIntyre and Barr 1997). Territoriality is expressed less strongly in fall and winter (McIntyre 1978). (For territory size, see “Home range” page 6).

Vocalizations.—Common loons have a repetoire of four basic call types: yodel, hoot, wail, and tremolo (McIntyre and Barr 1997). The yodel, given only by males, is a territorial signal and is sometimes thought of as the loon’s “song.” The hoot is a brief, low note used as a contact call. Wails, fairly long and pure notes, signal a “willingness to interact” (McIntyre and Barr 1997). The tremolo, or “laughing” call, indicates distress and suggests an escape tendency (McIntyre and Barr 1997); it is used during nest/chick defense or when fleeing, and can be prompted by human disturbance.

Locomotion.—Common loons travel poorly over land, because their legs are positioned well behind their center of gravity. Therefore, they spend most of their time on the water or near its edge. While swimming, loons use only their feet for propulsion, but may also use their tail when changing direction. To become airborne, loons patter along the water surface for 30-200 m (100-650 ft) (McIntyre and Barr 1997). Once airborne, loons are powerful fliers, readily reaching 120 kph (75 mph) (Kerlinger 1982, cited in McIntyre and Barr 1997).

HABITAT REQUIREMENTS

Common loons typically breed on forest lakes with deep inlets or bays and numerous islands (McIntyre and Barr 1997). During migration, they stage on rivers, reservoirs, and lakes. They tend to winter in shallow, sheltered marine waters. In all situations, loons require water bodies with ample prey populations.

Home Range

Home ranges, which typically equate to territories, vary widely in size depending upon habitat quality. The average size of 420 Ontario territories was 70.4 ha (174 ac), with a range between 7 and 200 ha (17-494 ac) (Barr 1973, cited in McIntyre and Barr 1997). In Nova Scotia, territories were at least 20 ha (49 ac) in size, but successful territories covered at least 40 ha (100 ac) (Kerekes et al. 1994, cited in McIntyre and Barr 1997). Seventy loon-nesting lakes monitored in northern Wisconsin ranged in size from 20 to 120 ha (50 to 300 ac) (Meyer and Woodford 1996). Pairs nesting on a 22-ha oligotrophic lake in New Brunswick have had excellent fledging success (Clay and Clay 1997). Loons nesting on smaller lakes may defend additional lake(s) (Miller and Dring 1988) or use nonterritorial water bodies for feeding (Parker 1985, cited in Strong and Bissonette 1988).

Nesting

Common loons nest at ground level within 1.5 m (5 ft) of water. Preferred sites provide some shelter from winds, allow a broad view of the loon's territory, and may include screening vegetation (McIntyre and Barr 1997). Loons often nest on small islands or floating bog mats in medium- to large-size lakes, but will also use mainland shorelines. Where marshes receive less human disturbance than islands, loons may use them preferentially (Alvo 1981). Common loons readily use artificial nesting platforms.

Nursery

Common loon chicks, as soon as they are dry, are guided from their nest to a "nursery" area within the territory (McIntyre 1983). Nurseries contain calm, shallow water, sheltering vegetation, and a population of small fish adequate for two chicks for at least 2 weeks (McIntyre 1983).

Foraging

Common loons forage primarily in shallow, clear water with little obstructing vegetation (McIntyre and Barr 1997). They usually use the top 5 m of the water column, but can dive to at least 60 m to seek food in clear water (McIntyre and Barr 1997). Common loons are only known to feed during daylight (McIntyre and Barr 1997).

POPULATION STATUS AND TREND

Worldwide

The common loon world population, which resides primarily in Canada, has been estimated at 500,000 to 700,000 individuals (Rose and Scott 1996, cited in McIntyre and Barr 1997). Numbers in the southern portion of the breeding range were reduced, likely due to persecution, early in the 20th century, but recent Breeding Bird Survey data show an increase (McIntyre and Barr 1997).

Washington Breeding

Past.—Little documentation exists on historic loon nesting in Washington. Just four confirmed nests and one unconfirmed nest, all discovered prior to 1926, were referenced by Jewett et al. (1953). Two of the confirmed nests were from the same location (Lake Kapowsin, Pierce County) and a third was from a nearby lake. Despite such sparse evidence, these authors labeled the loon, "a fairly common nesting species...east and west of the Cascades" (Jewett et al. 1953:49). Alcorn (1978) provided another perspective, albeit 25 years later, on common loon nesting in Washington. He believed loons to breed "sparingly" west of the Cascades while stating simply that they nested east of the Cascade crest, also. Museum collections add little to the historic record (Appendix C).

Through 1985, almost nothing else was written about the status of Washington's breeding loon population. This knowledge gap may be due to limited concern for loons, few or no survey efforts, or a decline in loon abundance, nest sites, or productivity (Spencer 1990). In the mid to late 1980's, however, greater attention was given to loon surveys. In 1985, Richards and Musche (1985) searched for nesting loons at dozens of lakes in Ferry, Stevens, and Pend Oreille counties, but discovered only 2 nesting pairs. In 1989, Corkran (1990) and others made a statewide search and confirmed loons nested (or "apparently attempted to nest") at 8 lakes. An estimated 9 young were produced in 1989 (Corkran 1990). The Department of Wildlife subsequently surveyed Whatcom, Snohomish, and King counties for loon activity in 1989 and 1990. Department biologists have revisited confirmed nesting sites, and searched for additional breeding lakes, regularly during the 1990's, but no comprehensive survey of potential nesting lakes has been attempted, except in King County.

Present.—The Washington breeding loon population apparently numbers fewer than 10 pairs, based on Breeding Bird Atlas data (Smith et al. 1997), agency surveys (Washington Department of Fish and Wildlife, North Cascades National Park, Seattle Water District), and other sources (e.g., Loon Lake Loon Association, Washington Ornithological Society). Table 1 presents information on Washington water bodies where common loons have been documented to nest in recent years. Additional, non-breeding loons, most of them probably sub-adults, are found on lakes, rivers, and marine waters during Washington summers. Summer (July) surveys by the

Puget Sound Ambient Monitoring Program revealed 14 to 36 common loons between 1992 and 1998, resulting in estimated population indexes in the low hundreds.

Table 1. Common loon productivity status on Washington water bodies where nesting has been reported during at least 1 year, 1985 to 1998. An asterisk (*) indicates where results from multiple nests are combined into a single report.

County: Water body	85	86	87	88	89	90	91	92	93	94	95	96	97	98
Benton: Columbia R.; White Bluffs				U										
Chelan: Wenatchee Lake					2	P								
Clallam: Lake Ozette														P
Ferry: North Twin Lake*	1					F	F	1	1	1	1	1	2	2
Ferry: South Twin Lake	1			F		P	1	2	1	1	1	1	1	2
King: Calligan Lake				1	1	1	F	F	P	P				
King: Chester Morse Reservoir*				2	3	4	2	1	F		2		4	
King: Eagle Lake							1	2	F					
King: Howard Hanson Reservoir										F	F		2	2
King: Tolt Reservoir						F	P	P	1	1	P	1	1	P
Okanogan: Beaver Lake									P	S	P	P	P	P
Okanogan: Beth Lake									P	S	P	P	U	P
Okanogan: Blue Lake (Sinlahekin)									P	S		S	U	P
Okanogan: Bonaparte Lake									U	F	2	2	2	2
Okanogan: Chaplain Lake				U										
Okanogan: Chopaka Lake				U								P		P
Okanogan: Hidden Lakes			S	S	S	S	S	S	S	S	S	S		
Okanogan: Lost Lake	P	P	P	2	2	2	2	2	2	2	2	2	2	2
Okanogan: Osoyoos Lake					P				P	P	P	S	P	P
Okanogan: Sidley Lake					P							P	P	P
Okanogan: Spectacle Lake					1				P			P	P	P
Whatcom: Hozomeen Lake				1	1	2	N	N					F	
Whatcom: Whatcom Lake								2		2				
Total confirmed nests*	**2**		**1**	**6**	**7**	**7**	**8**	**9**	**7**	**11**	**8**	**8**	**10**	**5**
Total young observed*	**2**			**6**	**10**	**9**	**6**	**10**	**5**	**7**	**8**	**7**	**14**	**10**

P = loons present sometime between May and August
N = confirmed nesting; no further information available
F = confirmed nesting; nest failed
S = confirmed nesting; successful, but number of young unknown
# = confirmed nesting; number of young observed (not all chicks fledge)
U = unconfirmed nesting
1988 — Inadequate details for Grant: Banks Lake; Douglas: Columbia River/Orondo; and Benton: Columbia River/Hanford Reach.
1989 — Inadequate details for Ferry: South Twin Lake; and Douglas: Columbia River/Orondo.

Washington Wintering

Common loons use Washington waters during migration and winter. Most occur in the marine environment, but a few use unfrozen lakes, reservoirs, or rivers. The Puget Sound Ambient Monitoring Program (PSAMP) has, since 1993, estimated wintering population indexes for the Sound and adjacent waters (Table 2). While the index is not a population estimate, it does indicate that the magnitude of the wintering population is likely to be in the low thousands. The reason for an apparent population increase between 1995 and 1996 surveys is unknown (J. Evenson, personal communication).

Table 2. Estimated population indexes for the common loon during winter surveys of Puget Sound and the Strait of Juan de Fuca (Puget Sound Ambient Monitoring Program, unpublished data).

Year	Actual Count	Population Index	95% C.I.*	Low Index	High Index
1993	121	1916	912	1004	2828
1994	143	1542	644	898	2186
1995	174	1572	381	1191	1953
1996	242	2257	536	1721	2793
1997	525	4830	884	3946	5714
1998	375	3877	800	3077	4677
1999	412	4237	972	3265	5209

*C.I. = Confidence Interval

Christmas Bird Counts (CBC) provide a rough comparison for winter abundance. About two-thirds of the state's CBC circles report common loons each year, with the highest numbers coming from those encompassing protected marine waters, such as Sequim-Dungeness (an average of 96 loons over 22 counts), Port Townsend (80/20), San Juan Islands (76/16), Grays Harbor (64/24), and Padilla Bay (56/20). Total common loon counts from all Washington CBC's have averaged 656 over the past 19 years (1980 to 1998), with no evident trend.

Wahl (1996) reported some high counts for specific Washington water bodies, based on winter surveys completed under the Marine Ecosystems Analysis program (MESA; Wahl et al. 1981) in the late 1970's. They include Drayton Harbor 142, Dungeness Bay 103, Birch Bay 68, Samish Bay 62, Sequim Bay 43, Padilla Bay 37, Admiralty Inlet 33, Hale Pass 32, Bellingham Bay 24, Lummi Bay 22, Fidalgo Bay 21. Fidalgo Bay was also surveyed seven times between 19 January and 28 April 1993 (R. Canniff, WDFW, unpublished data). These surveys revealed 10 to 18 common loons (mean=15), with no seasonal pattern.

Adjacent Breeding Areas

Common loons nest in small numbers in the North Cascades of British Columbia (e.g., Manning Lake in Manning Provincial Park) and are common in the Okanogon highlands above 950 m (3000 ft). A nesting pair also has been found at Swan Lake, Vernon, in the Okanogon Valley (Dick Cannings, cited in Richards and Musche 1985). The common loon is "critically imperiled" in Idaho; at least 12 Idaho lakes once supported breeding, but recent nesting has been limited. Loons also once nested in Oregon, but no breeding has been documented for decades (Corkran 1988).

HABITAT STATUS

Shoreline development, fluctuating water levels, and human disturbance are the factors most likely to preclude successful loon nesting on Washington lakes. Most otherwise suitable nesting lakes are subject to at least one of these influences.

CONSERVATION STATUS

Legal Status

Federal.—Common loons are protected under the Migratory Bird Treaty Act. This species is not listed or proposed for listing under the federal Endangered Species Act and is not considered a species of concern in Washington by the U.S. Fish and Wildlife Service.

State.—The common loon was a "proposed threatened" species in 1983, but no listing action was taken (Washington Department of Game 1983). In 1988, a cluster analysis ranked the common loon in the "highest priority" group of species scored by Department biologists. Again, no further action was taken. In 1990, when a formal listing process was developed for the Department, the common loon was not assigned a listing status. Instead, it was placed in the State Candidate pool.

Management Activities

Breeding-season surveys.—Richards and Musche (1985) visited 65 lakes in northeast Washington during June and July 1985. They deemed 2 of 12 lakes in Ferry County, 4 of 28 lakes in Stevens County, and 5 of 25 lakes in Pend Oreille County to be "feasible" for loon nesting. Corkran (1990), with assistance, visited 41 lakes across the state between June and August 1989, although some lakes were surveyed briefly or incompletely. She also compiled reports from 39 additional lakes. Department biologists surveyed 23 western Washington lakes in May and June 1990; 4 were in Whatcom County (Lettenberger 1990), 4 in Snohomish (Leschner 1991), 5 in Skagit (Davison 1990), and 10 in King (Spencer 1990). Several water bodies have

been regularly visited by WDFW and other biologists during the 1990's, particularly in King County, Okanogan County, and northeast Washington counties. Non-breeding loons are surveyed on summer transects by the Puget Sound Ambient Monitoring Program.

Winter surveys.—In the late 1970's, the Marine Ecosystems Analysis program provided data on waterbird abundance throughout inland marine waters of Washington (Wahl et al. 1981). Since 1993, biologists within the Puget Sound Ambient Monitoring Program (PSAMP) have flown aerial transects throughout the Sound.

Banding.—In 1995 and 1996, 11 loons were captured in Washington using the spotlighting technique (Evers 1993b). In 1995, four adults were captured and color-banded at Lost and Bonaparte lakes, and two young were color-banded on Chester Morse Reservoir. In 1996, the Bonaparte Lake male was recaptured and one young loon was color-banded there. Also in 1996, two young were color-banded at Lost Lake and an adult female was color-banded on South Twin Lake. Color bands are visible when swimming loons "foot waggle," or lift and stretch a leg and foot into the air. This permits observers to note color-band information and recognize birds at natal sites or other lakes. Band "returns" also provide data on loon longevity.

Nest platforms.—Loons use artificial nesting platforms on numerous lakes across North America. Platforms can provide nesting substrate where it is lacking, offer some protection from mammalian predators, and rise and fall with water levels (preventing inundation or inaccessibility). Nesting success is often enhanced after platforms are installed (e.g., Mathisen 1969, McIntyre and Mathisen 1977), and gradually increasing loon populations can be attributed, in part, to platform use. Platforms have been anchored in several Washington lakes and have received regular use in some locations (Table 3). However, platforms should not be expected to "attract" loons to a lake or reservoir. They will likely be most successful where loons are already prospecting for breeding sites and where other nesting-lake prerequisites are met.

Table 3. Some Washington water bodies where floating nest platforms have been installed.

County: Water body	Number of platforms	When installed	"Delay" till use	Repair status in 1999
King: Howard Hansen Reservoir	2	1994	30 minutes	good
King: Chester Morse Reservoir	3	1992	1 or 2 days	good
King: Calligan Lake	1	1991	unknown	lost

Nest protection.—Signs or floating markers have been used to encourage lake users to avoid common loon nesting sites. The Loon Lake Loon Association has installed floating markers on Loon and Deer lakes. The Colville Confederated Tribes Fish and Wildlife Division has installed floating markers on Twin Lakes.

Public education.—The North American Loon Fund (NALF), a nonprofit conservation organization, sponsors research, management, and education programs throughout North America. The Loon Lake Loon Association has promoted awareness of loons and their habitats in northeast Washington.

FACTORS AFFECTING CONTINUED EXISTENCE

Adequacy of Existing Regulatory Mechanisms

Common loons are protected under both state and federal law from malicious harm. Neither state nor federal law protect loon nesting habitats. Loons are also inadequately protected from human disturbances.

Federal Migratory Bird Treaty Act.—Common loons are protected under the Migratory Bird Treaty Act. Under the act, it is unlawful to pursue, hunt, take, capture, or kill common loons; or to attempt to take, capture or kill them; or to possess, exchange, or ship them, their parts, nests, or eggs.

State Protected Wildlife Code.—Washington Administrative Code 232-12-011 identifies the common loon as protected wildlife. Under the Revised Code of Washington 77.16.120, it is unlawful to hunt, possess, or control common loons, their nests, or their eggs.

Present and Threatened Habitat Loss

Development.—Breeding habitat for common loons is permanently lost when development along shorelines obliterates optimal habitat. Loons may cease to use developed lakes altogether, or may select marginal nest sites where their productivity is lessened. Lakeshore development is often accompanied by an increase in human activities both on shorelines and in the water. In a central Ontario study, hatching success decreased as cottage density increased and nest success increased with distance from the nearest cottage (Heimberger et al. 1983). A comparison of historic (circa 1940's) and current aerial photographs reveals significant increases in shoreline development at selected sites in King County (R. Spencer, unpublished data). All lakes studied show a decline in potential for supporting nesting loons.

Water levels.—Loon nests along shorelines, particularly in reservoirs, are vulnerable to washout when water levels rise or fall. Rising water can flood nests, prompting abandonment or failure, while falling water can render nests unapproachable (Fair 1979). Sometimes nesting loons can respond to gradually rising water levels by building up their nests. McIntyre (1988) found loons could contend with a 15 cm rise over 2 or 3 days, but nests would fail with a 20 cm rise. When changes in water level are unavoidable, loons have been provided with floating platforms to allow nests to remain accessible and unflooded.

Human Disturbance

Human activities can directly or indirectly affect common loon site fidelity and reproductive success. Shoreline walkers, canoeists, motorboaters, and "jet-skiers" each can disrupt normal loon behavior patterns. Pedestrians can frighten loons from their nests, canoeists can separate young loons from their parents, and motorized watercraft can create wakes that wash out nests (Vermeer 1973a). Though disturbance is usually unintended, some boaters intentionally approach—or even chase—loons, which can lead to loon exhaustion or injury. Fortunately, some loons habituate to human activities and can reproduce successfully at lakes with moderate levels of disturbance.

Fishing activity can be intense on lakes that appear suitable for loon nesting. At Loon and Deer lakes in northeast Washington, however, loon departure around the opening of fishing season appears to be coincidental; loon numbers taper off in late April whether before or after the opener (Zender 1995). On the other hand, preliminary observations in western Washington suggest that some loon departure is the result of fishing season activity. On opening days, a tremendous influx and concentration of boating activity occurs on many lakes occupied by loons. Some of these lakes appear to be potential nesting sites, but pair bonding, territory establishment, and nesting are precluded by the high level of human activity associated with season openers (R. Spencer, personal observation).

Entanglement and Entrapment

Vermeer (1973b) found 12 adult common loons entangled in fish nets in British Columbia; 6 others were known to have been released after being caught in nets. Fishing traps in the Great Lakes have killed hundreds of common loons per year, though experiments with net design have shown that loons can escape modified traps (Carey 1993). Loons have also been caught in fishing nets in Washington; some have been released alive while others have died. Loon entanglement has been documented in gill nets, but not purse seines, and has occurred in non-treaty fisheries in Puget Sound, Hood Canal, Willapa Bay, Grays Harbor, and the Columbia River (Erstad et al. 1994, Pierce et al. 1994, Purse Seine Vessel Owners Association and Natural Resources Consultants 1994, Erstad et al. 1996, Jeffries et al. 1996). Among individuals affected have been at least 11 common, 1 yellow-billed, and 3 unidentified loons. Based on timing and locations, all are believed to have been non-breeding birds, though some young of the year could be included. Only a portion of each fishery was sampled, however, so documented take represents just a fraction of the actual incidental take.

Several additional common loons have fallen victim to fishing gear in Washington. On 26 April 1975, a common loon drowned in a gill net 16 km downstream of Grand Coulee Dam, Okanogan County (Burke Museum number 32949). In August 1990, a common loon became entangled in a fishing line on Loon Lake, Stevens County (S. Zender, personal communication). It was successfully untangled and left the lake 3 days later. On 24 November 1990, an emaciated common loon was found dead with fishing line around its beak on Benson Lake, Mason County

(Slater Museum number PSM 12348). In June 1997, a loon was rescued (but died in captivity) near Westport, Grays Harbor County, with a fish hook in its throat (Slater Museum number PSM 22167).

Toxicants

Lead.—Lead toxicosis affects loons in New England (Pokras et al. 1993), Minnesota (Franson and Cliplef 1993), and elsewhere. Lead jigs or sinkers are often found in loon proventricula or gizzards. They may be consumed with live bait or taken from lake bottoms (as "gravel") (Pokras et al. 1993). Lead poisoning causes loss of balance, gasping, tremors, and impaired ability to fly. Consuming a single lead sinker is enough to kill a loon (Smrchek 1994).

The U.S. Environmental Protection Agency (EPA; 1994) proposed, under the Toxic Substances Control Act, to prohibit manufacturing, processing, and distribution in commerce of lead- or zinc-containing fishing sinkers for use in the United States. The EPA continues to deliberate on the proposed rule and response (T. Spector, personal communication, May 1999). Loons may soon receive some protection from poisoning through a ban on lead sinkers and jigs in some national wildlife refuges (U.S. Fish and Wildlife Service 1999).

Mercury.—Naturally-occurring mercury is likely not a threat to loons. Mercury is also a by-product of coal-fired power generation, however, so environmental levels have increased substantially in some areas (e.g., midwestern and northeastern United States), placing loons at risk of poisoning. At 70 Wisconsin lakes, where over 360 adults and chicks were banded and bled between 1992 and 1996, common loons were less productive and chick survival was lower where loons were exposed to high levels of mercury (Meyer and Woodford 1996). Elevated mercury exposure has also been linked to low productivity in Ontario (Fimreite 1973, Barr 1986). Emaciation is a clinical symptom of elevated levels of mercury (Fimreite 1979). In addition to a lowered body weight, mercury intoxication can impair motor coordination, which may compromise foraging ability (Spitzer 1995). Mercury was suggested as a possible contributing factor to a major die-off of common loons on the northern Gulf coast of Florida in winter 1982/1983 (Alexander 1991). High levels of mercury can also suppress immune systems, making loons susceptible to diseases such as aspergillosis. In 1994, fragments from 10 loon eggs collected in western Washington were analyzed for environmental contaminants, but mercury was below detection level (10 ppb) (R. Spencer and D. Paige, unpublished data).

Organochlorines.—DDTs, PCBs, and other organochlorines have apparently not affected loon populations (McIntyre and Barr 1997). In British Columbia, Vermeer (1973b) found no correlation between DDE levels and shell thickness in 15 eggs from different clutches. Ten eggs from western Washington tested in 1994 did not contain biologically significant levels of organochlorines or PCB's (R. Spencer and D. Paige, unpublished data). Although loon eggshells in some areas are thinner than they were prior to 1947, thinning is not considered biologically significant (McIntyre and Barr 1997).

Oil Spills

Numerous effects of oil on birds have been well documented (Burger and Fry 1993). The most obvious and dramatic effect is plumage fouling, which can rapidly lead to hypothermia and death. A variety of other ailments, some of them lethal, can be brought on by exposure to oil. Reproductive success also can be compromised by direct oiling of eggs or indirect effects on embryos. Loons are especially vulnerable to oiling during their flightless period, which lasts a few weeks between mid-winter and early spring (or between spring or summer in younger birds) (McIntyre and Barr 1997).

Oil-affected loons have been recovered following recent oil spills in Washington. One oiled common loon was found dead on Copalis Beach after a 1964 barge spill (Slater Museum number PSM 08954); five oiled common loons were processed at a cleaning station after the 1985 *ARCO Anchorage* spill in Port Angeles harbor (Kittle et al. 1987); four common loons were among dead, oiled birds recovered after the 1988 *Nestucca* spill off Grays Harbor (Rodway et al. 1989; B. Troutman, personal communication), and one common loon was found after the 1991 *Tenyo Maru* spill off Cape Flattery (B. Troutman, personal communication). Recoveries of beached birds represent only a fraction of those impacted.

Persecution

Common loons have been shot to prevent them from competing with humans for access to fish. Shooting likely played an important role in the historic decline of the loon. Such persecution was "probably devastating" to loon populations (McIntyre and Barr 1997). Killing loons to protect fish was sanctioned as recently as June 1956, when the U.S. Fish and Wildlife Service granted the Washington Department of Game a 10-day permit to kill loons on Lake Hannan, Snohomish County. Although no loons were killed under the permit, the birds were driven from the lake.

Predation

Common loon predators include eagles, corvids, gulls, coyotes, raccoons, and mustelids (McIntyre and Barr 1997; R. Spencer, personal observation). Natural levels of predation are unlikely to pose a threat to common loons. Predation on eggs and young can increase, however, when people are active near loon nesting areas. Nests can be plundered when adult loons leave them exposed in response to human disturbance. Young can be taken when they are separated from adults by people in boats. Young are not proficient divers until about 2 wk post-hatching (Sjölander and Ågren 1972); they are most vulnerable to predators during this period. Where houses, cottages, and encampments elevate populations of commensal animals such as raccoons, nesting loons may be exposed to above-normal predator densities.

Disease

Avian botulism is a paralytic condition occurring when birds consume a naturally-occurring toxin produced by the bacterium *Clostridium botulinum*. Type E botulism has, during some years, reached epidemic levels in the Great Lakes region (Brand et al. 1988), but it has not been diagnosed elsewhere in the United States. Type C botulism is more widespread. Both types have been diagnosed on common loons. Aspergillosis, a fungal infection of the respiratory tract, has been commonly diagnosed in loons.

OTHER SPECIES OF CONCERN

The pygmy whitefish, a State Sensitive species, is found in lakes where loons currently or potentially nest. Bald eagles are found in the vicinity of loon nests; they may prey upon young loons.

CONCLUSION AND RECOMMENDATION

The common loon is a poorly-known species in Washington, with nearly all available information on nesting dating from the past 15 years. It is currently a rare breeder, but a common migrant and wintering species, within the state. Typically, fewer than 10 loon nests are known to be active each year. They are found in Chelan, Ferry, King, Okanogan, and Whatcom counties.

Common loons once were described as a fairly common breeding species both east and west of the Cascade crest, but good data on the species' historic status are unavailable. At a significant number of lakes throughout Washington, however, that in the past offered ideal conditions for loon nesting, the capacity to support breeding pairs has been removed. Characteristic sites would have been relatively undisturbed forest lakes at least 20 ha in size with deep inlets and bays. They would have had islands or logs and other floating debris for nest sites. Finally, they would have been characterized by high water quality, an adequate food source, and seclusion from intense human activity. At many lakes, these conditions have been lost.

Shoreline development eliminates nesting habitat and increases the level of human activity in the vicinity of loon nests. Human disturbance lowers loon productivity and may preclude nesting at important sites. Persecution directed toward loons causes abandonment of nesting lakes. Drastic change in water level (frequent events at reservoirs) either floods nests or renders them unapproachable, causing abandonment. Considering this species' ecology and the degradation of nesting lakes, we suspect this species has declined considerably as a breeder throughout Washington.

While human influences are problematic, allowances for loons sometimes are made. Floating nest platforms, access restrictions, and educational campaigns each have helped the current loon population to become somewhat stable at certain sites. Currently, about half the loon nests documented each year are located on water bodies that are relatively inaccessible to people, so they have limited human disturbance. Even loons on these lakes, however, exhibit sporadic nesting and fledging success.

Increased development and recreational pressure at sensitive nesting lakes must be actively managed to prevent further loss of nesting loons. Protection and education programs must be expanded to appropriate lakes that currently do not support breeding loons to allow the species to recolonize and nest undisturbed, ensuring a stable and well-distributed population.

Common loons are susceptible to oiling during spills and are caught in gillnets. In other parts of their range, lead and mercury poisoning are a serious concern. Data on toxicants in Washington's breeding loons is limited, but preliminary results indicate heavy metal accummulation and PCB's are not a threat to breeding loon populations in Washington.

Although the common loon has been little studied in Washington, biologists have long been concerned about the health of the state population. Protective designations have been suggested since the early 1980's, but no action has been taken. Under current conditions, the loon population is not in imminent danger of extirpation. It is, however, likely to become endangered in the foreseeable future without cooperative management and removal of threats. The Department, therefore, recommends the common loon be listed as a State Threatened species.

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Appendix A. Washington Administrative Codes 232-12-011 and 232-12-014.

WAC 232-12-011 Wildlife classified as protected shall not be hunted or fished.

Protected wildlife are designated into three subcategories: Threatened, sensitive, and other.
(1) Threatened species are any wildlife species native to the state of Washington that are likely to become endangered within the foreseeable future throughout a significant portion of their range within the state without cooperative management or removal of threats. Protected wildlife designated as threatened include:

Common Name	Scientific Name
western gray squirrel	*Sciurus griseus*
Steller (northern) sea lion	*Eumetopias jubatus*
North American lynx	*Lynx canadensis*
Aleutian Canada goose	*Branta canadensis leucopareia*
bald eagle	*Haliaeetus leucocephalus*
ferruginous hawk	*Buteo regalis*
marbled murrelet	*Brachyramphus marmoratus*
green sea turtle	*Chelonia mydas*
loggerhead sea turtle	*Caretta caretta*
sage grouse	*Centrocercus urophasianus*
sharp-tailed grouse	*Phasianus columbianus*

(2) Sensitive species are any wildlife species native to the state of Washington that are vulnerable or declining and are likely to become endangered or threatened in a significant portion of their range within the state without cooperative management or removal of threats. Protected wildlife designated as sensitive include:

Common Name	Scientific Name
Gray whale	*Eschrichtius robustus*
Larch Mountain salamander	*Plethodon larselli*
Pygmy whitefish	*Prosopium coulteri*
Margined sculpin	*Cottus marginatus*

(3) Other protected wildlife include:

Common Name	Scientific Name
cony or pika	*Ochotona princeps*
least chipmunk	*Tamius minimus*
yellow-pine chipmunk	*Tamius amoenus*
Townsend's chipmunk	*Tamius townsendii*

red-tailed chipmunk	*Tamius ruficaudus*
hoary marmot	*Marmota caligata*
Olympic marmot	*Marmota olympus*
Cascade golden-mantled ground squirrel	*Spermophilus saturatus*
golden-mantled ground squirrel	*Spermophilus lateralis*
Washington ground squirrel	*Spermophilus washingtoni*
red squirrel	*Tamiasciurus hudsonicus*
Douglas squirrel	*Tamiasciurus douglasii*
northern flying squirrel	*Glaucomys sabrinus*
wolverine	*Gulo gulo*
painted turtle	*Chrysemys picta*
California mountain kingsnake	*Lampropeltis zonata;*

All birds not classified as game birds, predatory birds or endangered species, or designated as threatened species or sensitive species; all bats, except when found in or immediately adjacent to a dwelling or other occupied building; all wildlife within Titlow Beach Marine Preserve Area and the conservation areas defined in chapter 220-16 WAC; mammals of the order *Cetacea*, including whales, porpoises, and mammals of the order *Pinnipedia* not otherwise classified as endangered species, or designated as threatened species or sensitive species. This section shall not apply to hair seals and sea lions which are threatening to damage or are damaging commercial fishing gear being utilized in a lawful manner or when said mammals are damaging or threatening to damage commercial fish being lawfully taken with commercial gear.

[Statutory Authority: RCW 77.12.020. 98-23-013 (Order 98-232), § 232-12-011, filed 11/6/98, effective 12/7/98. Statutory Authority: RCW 77.12.040. 98-10-021 (Order 98-71), § 232-12-011, filed 4/22/98, effective 5/23/98. Statutory Authority: RCW 77.12.040 and 75.08.080. 98-06-031, § 232-12-011, filed 2/26/98, effective 5/1/98. Statutory Authority: RCW 77.12.020. 97-18-019 (Order 97-167), § 232-12-011, filed 8/25/97, effective 9/25/97. Statutory Authority: RCW 77.12.040, 77.12.020, 77.12.030 and 77.32.220. 97-12-048, § 232-12-011, filed 6/2/97, effective 7/3/97. Statutory Authority: RCW 77.12.020. 93-21-027 (Order 615), § 232-12-011, filed 10/14/93, effective 11/14/93; 90-11-065 (Order 441), § 232-12-011, filed 5/15/90, effective 6/15/90. Statutory Authority: RCW 77.12.040. 89-11-061 (Order 392), § 232-12-011, filed 5/18/89; 82-19-026 (Order 192), § 232-12-011, filed 9/9/82; 81-22-002 (Order 174), § 232-12-011, filed 10/22/81; 81-12-029 (Order 165), § 232-12-011, filed 6/1/81.]

WAC 232-12-014 Wildlife classified as endangered species. Endangered species include:

Common Name	Scientific Name
pygmy rabbit	*Brachylagus idahoensis*
fisher	*Martes pennanti*
gray wolf	*Canis lupus*
grizzly bear	*Ursus arctos*
sea otter	*Enhydra lutris*
sei whale	*Balaenoptera borealis*
fin whale	*Balaenoptera physalus*
blue whale	*Balaenoptera musculus*
humpback whale	*Megaptera novaeangliae*
black right whale	*Balaena glacialis*
sperm whale	*Physeter macrocephalus*
Columbian white-tailed deer	*Odocoileus virginianus leucurus*
woodland caribou	*Rangifer tarandus caribou*
American white pelican	*Pelecanus erythrorhynchos*
brown pelican	*Pelecanus occidentalis*
peregrine falcon	*Falco peregrinus*
sandhill crane	*Grus canadensis*
snowy plover	*Charadrius alexandrinus*
upland sandpiper	*Bartramia longicauda*
spotted owl	*Strix occidentalis*
western pond turtle	*Clemmys marmorata*
leatherback sea turtle	*Dermochelys coriacea*
Oregon silverspot butterfly	*Speyeria zerene hippolyta*
Oregon spotted frog	*Rana pretiosa*

[Statutory Authority: RCW 77.12.020. 98-23-013 (Order 98-232), § 232-12-014, filed 11/6/98, effective 12/7/98; 97-18-019 (Order 97-167), § 232-12-014, filed 8/25/97, effective 9/25/97; 93-21-026 (Order 616), § 232-12-014, filed 10/14/93, effective 11/14/93. Statutory Authority: RCW 77.12.020(6). 88-05-032 (Order 305), § 232-12-014, filed 2/12/88. Statutory Authority: RCW 77.12.040. 82-19-026 (Order 192), § 232-12-014, filed 9/9/82; 81-22-002 (Order 174), § 232-12-014, filed 10/22/81; 81-12-029 (Order 165), § 232-12-014, filed 6/1/81.]

Appendix B. Washington Administrative Code 232-12-297

WAC 232-12-297 Endangered, threatened, and sensitive wildlife species classification.

Purpose

1.1 The purpose of this rule is to identify and classify native wildlife species that have need of protection and/or management to ensure their survival as free-ranging populations in Washington and to define the process by which listing, management, recovery, and delisting of a species can be achieved. These rules are established to ensure that consistent procedures and criteria are followed when classifying wildlife as endangered, or the protected wildlife subcategories threatened or sensitive.

Definitions

For purposes of this rule, the following definitions apply:

2.1 "Classify" and all derivatives means to list or delist wildlife species to or from endangered, or to or from the protected wildlife subcategories threatened or sensitive.

2.2 "List" and all derivatives means to change the classification status of a wildlife species to endangered, threatened, or sensitive.

2.3 "Delist" and its derivatives means to change the classification of endangered, threatened, or sensitive species to a classification other than endangered, threatened, or sensitive.

2.4 "Endangered" means any wildlife species native to the state of Washington that is seriously threatened with extinction throughout all or a significant portion of its range within the state.

2.5 "Threatened" means any wildlife species native to the state of Washington that is likely to become an endangered species within the foreseeable future throughout a significant portion of its range within the state without cooperative management or removal of threats.

2.6 "Sensitive" means any wildlife species native to the state of Washington that is vulnerable or declining and is likely to become endangered or threatened in a significant portion of its range within the state without cooperative management or removal of threats.

2.7 "Species" means any group of animals classified as a species or subspecies as commonly accepted by the scientific community.

2.8 "Native" means any wildlife species naturally occurring in Washington for purposes of breeding, resting, or foraging, excluding introduced species not found historically in this state.

2.9 "Significant portion of its range" means that portion of a species' range likely to be essential to the long term survival of the population in Washington.

Listing criteria

3.1 The commission shall list a wildlife species as endangered, threatened, or sensitive solely on the basis of the biological status of the species being considered, based on the preponderance of scientific data available, except as noted in section 3.4.

3.2 If a species is listed as endangered or threatened under the federal Endangered Species Act, the agency will recommend to the commission that it be listed as endangered or threatened as specified in section 9.1. If listed, the agency will proceed with development of a recovery plan pursuant to section 11.1.

3.3 Species may be listed as endangered, threatened, or sensitive only when populations are in danger of failing, declining, or are vulnerable, due to factors including but not restricted to limited numbers, disease, predation, exploitation, or habitat loss or change, pursuant to section 7.1.

3.4 Where a species of the class Insecta, based on substantial evidence, is determined to present an unreasonable risk to public health, the commission may make the determination that the species need not be listed as endangered, threatened, or sensitive.

Delisting criteria

4.1 The commission shall delist a wildlife species from endangered, threatened, or sensitive solely on the basis of the biological status of the species being considered, based on the preponderance of scientific data available.

4.2 A species may be delisted from endangered, threatened, or sensitive only when populations are no longer in danger of failing, declining, are no longer vulnerable, pursuant to section 3.3, or meet recovery plan goals, and when it no longer meets the definitions in sections 2.4, 2.5, or 2.6.

Initiation of listing process

5.1 Any one of the following events may initiate the listing process.

5.1.1 The agency determines that a species population may be in danger of failing, declining, or vulnerable, pursuant to section 3.3.

5.1.2 A petition is received at the agency from an interested person. The petition should be addressed to the director. It should set forth specific evidence and scientific data which shows that the species may be failing, declining, or vulnerable, pursuant to section 3.3. Within 60 days, the agency shall either deny the petition, stating the reasons, or initiate the classification process.

5.1.3 An emergency, as defined by the Administrative Procedure Act, chapter 34.05 RCW. The listing of any species previously classified under emergency rule shall be governed by the provisions of this section.

5.1.4 The commission requests the agency review a species of concern.

5.2 Upon initiation of the listing process the agency shall publish a public notice in the Washington Register, and notify those parties who have expressed their interest to the department, announcing the initiation of the classification process and calling for scientific information relevant to the species status report under consideration pursuant to section 7.1.

Initiation of delisting process

6.1 Any one of the following events may initiate the delisting process:

6.1.1 The agency determines that a species population may no longer be in danger of failing, declining, or vulnerable, pursuant to section 3.3.

6.1.2 The agency receives a petition from an interested person. The petition should be addressed to the director. It should set forth specific evidence and scientific data which shows that the species may no longer be failing, declining, or vulnerable, pursuant to section 3.3. Within 60 days, the agency shall either deny the petition, stating the reasons, or initiate the delisting process.

6.1.3 The commission requests the agency review a species of concern.

6.2 Upon initiation of the delisting process the agency shall publish a public notice in the Washington Register, and notify those parties who have expressed their interest to the department, announcing the initiation of the delisting process and calling for scientific information relevant to the species status report under consideration pursuant to section 7.1.

Species status review and agency recommendations

7.1 Except in an emergency under 5.1.3 above, prior to making a classification recommendation to the commission, the agency shall prepare a preliminary species status report. The report will include a review of information relevant to the species' status in Washington and address factors affecting its status, including those given under section 3.3. The status report shall be reviewed by the public and scientific community. The status report will include, but not be limited to an analysis of:

7.1.1 Historic, current, and future species population trends

7.1.2 Natural history, including ecological relationships (e.g. food habits, home range, habitat selection patterns).

7.1.3 Historic and current habitat trends.

7.1.4 Population demographics (e.g. survival and mortality rates, reproductive success) and their relationship to long term sustainability.

7.1.5 Historic and current species management activities.

7.2 Except in an emergency under 5.1.3 above, the agency shall prepare recommendations for species classification, based upon scientific data contained in the status report. Documents shall be prepared to determine the environmental consequences of adopting the recommendations pursuant to requirements of the State Environmental Policy Act (SEPA).

7.3 For the purpose of delisting, the status report will include a review of recovery plan goals.

Public review

8.1 Except in an emergency under 5.1.3 above, prior to making a recommendation to the commission, the agency shall provide an opportunity for interested parties to submit new scientific data relevant to the status report, classification recommendation, and any SEPA findings.

8.1.1 The agency shall allow at least 90 days for public comment.

8.1.2 The agency will hold at least one Eastern Washington and one Western Washington public meeting during the public review period.

Final recommendations and commission action

9.1 After the close of the public comment period, the agency shall complete a final status report and classification recommendation. SEPA documents will be prepared, as necessary, for the final agency recommendation for classification. The classification recommendation will be presented to the commission for action. The final species status report, agency classification recommendation, and SEPA documents will be made available to the public at least 30 days prior to the commission meeting.

9.2 Notice of the proposed commission action will be published at least 30 days prior to the commission meeting.

Periodic species status review

10.1 The agency shall conduct a review of each endangered, threatened, or sensitive wildlife species at least every five years after the date of its listing. This review shall include an update of the species status report to determine whether the status of the species warrants its current listing status or deserves reclassification.

10.1.1 The agency shall notify any parties who have expressed their interest to the department of the periodic status review. This notice shall occur at least one year prior to end of the five year period required by section 10.1.

10.2 The status of all delisted species shall be reviewed at least once, five years following the date of delisting.

10.3 The department shall evaluate the necessity of changing the classification of the species being reviewed. The agency shall report its findings to the commission at a commission meeting. The agency shall notify the public of its findings at least 30 days prior to presenting the findings to the commission.

10.3.1 If the agency determines that new information suggests that classification of a species should be changed from its present state, the agency shall initiate classification procedures provided for in these rules starting with section 5.1.

10.3.2 If the agency determines that conditions have not changed significantly and that the classification of the species should remain unchanged, the agency shall recommend to the commission that the species being reviewed shall retain its present classification status.

10.4 Nothing in these rules shall be construed to automatically delist a species without formal commission action.

Recovery and management of listed species

11.1 The agency shall write a recovery plan for species listed as endangered or threatened. The agency will write a management plan for species listed as sensitive. Recovery and management plans shall address the listing criteria described in sections 3.1 and 3.3, and shall include, but are not limited to:

11.1.1 Target population objectives

11.1.2 Criteria for reclassification

11.1.3 An implementation plan for reaching population objectives which will promote cooperative management and be sensitive to landowner needs and property rights. The plan will specify resources needed from and impacts to the department, other agencies (including federal, state, and local), tribes, landowners, and other interest groups. The plan shall consider various approaches to meeting recovery objectives including, but not limited to regulation, mitigation, acquisition, incentive, and compensation mechanisms.

11.1.4 Public education needs

11.1.5 A species monitoring plan, which requires periodic review to allow the incorporation of new information into the status report.

11.2 Preparation of recovery and management plans will be initiated by the agency within one year after the date of listing.

11.2.1 Recovery and management plans for species listed prior to 1990 or during the five years following the adoption of these rules shall be completed within 5 years after the date of listing or adoption of these rules, whichever comes later.

Development of recovery plans for endangered species will receive higher priority than threatened or sensitive species.

11.2.2 Recovery and management plans for species listed after five years following the adoption of these rules shall be completed within three years after the date of listing.

11.2.3 The agency will publish a notice in the Washington Register and notify any parties who have expressed interest to the department interested parties of the initiation of recovery plan development.

11.2.4 If the deadlines defined in sections 11.2.1 and 11.2.2 are not met the department shall notify the public and report the reasons for missing the deadline and the strategy for completing the plan at a commission meeting. The intent of this section is to recognize current department personnel resources are limiting and that development of recovery plans for some of the species may require significant involvement by interests outside of the department, and therefore take longer to complete.

11.3 The agency shall provide an opportunity for interested public to comment on the recovery plan and any SEPA documents.

Classification procedures review

12.1 The agency and an ad hoc public group with members representing a broad spectrum of interests, shall meet as needed to accomplish the following:

12.1.1 Monitor the progress of the development of recovery and management plans and status reviews, highlight problems, and make recommendations to the department and other interested parties to improve the effectiveness of these processes.

12.1.2 Review these classification procedures six years after the adoption of these rules and report its findings to the commission.

Authority

13.1 The commission has the authority to classify wildlife as endangered under RCW 77.12.020. Species classified as endangered are listed under WAC 232-12-014, as amended.

13.2 Threatened and sensitive species shall be classified as subcategories of protected wildlife. The commission has the authority to classify wildlife as protected under RCW 77.12.020. Species classified as protected are listed under WAC 232-12-011, as amended.

[Statutory Authority: RCW 77.12.040. 98-05-041 (Order 98-17), § 232-12-297, filed 2/11/98, effective 3/14/98. Statutory Authority: RCW 77.12.020. 90-11-066 (Order 442), § 232-12-297, filed 5/15/90, effective 6/15/90.]

Appendix C. Common loon egg sets and specimens suggesting possible breeding.

A letter was sent (except as noted) to the following museums on March 26, 1999, requesting information on common loon specimens or egg sets collected in Washington and held in their collections. A solid circle (●) indicates a museum held records from Washington, an open circle (○) indicates no records, and a dash (–) indicates no response was received before June 8, 1999.

○ The Academy of Natural Sciences, Philadelphia
○ American Museum of Natural History, New York
● Burke Museum, University of Washington, Seattle
– Carnegie Museum, Pittsburgh, Pennsylvania
– Central Washington University, Ellensburg
● Charles R. Conner Museum, Washington State University, Pullman
○ Cornell University, Ithaca, New York [via internet, accessed May 6, 1999, gopher://biodiversity.bio.uno.edu/77/.indices/bird/cubird?gavia+AND+immer]
– Field Museum of Natural History, Chicago
● James R. Slater Museum of Natural History, University of Puget Sound, Tacoma
○ Museum of Comparative Zoology, Harvard University, Cambridge, Massachusetts
– Museum of Natural History, Oregon State University, Corvallis
○ Museum of Natural History, University of Oregon, Eugene
○ Museum of Natural Science, Louisiana State University, Baton Rouge
● Museum of Zoology, University of Michigan, Ann Arbor
● National Museum of Natural History, Smithsonian Institution, Washington, D.C.
○ Natural History Museum of Los Angeles County, Los Angeles
○ Peabody Museum, Yale University, New Haven, Connecticut
○ Western Foundation of Vertebrate Zoology, Camarillo, California
– Walla Walla College, College Place
○ Whitman College, Walla Walla

Most specimens from Washington are loons taken during migration and winter. The following tables show records for specimens collected on fresh water between May and August. Collections represented are at the Conner Museum (CRCM), Burke Museum (UWBM), and the Slater Museum (PSM).

Egg sets

King: Lake Wilderness	10 May 1886	Collected by Colonel W. S. Scott	UWBM 3614

Rounds, mounts, skeletons, or wings

King: Pine Lake	8 May 1956	Donated by Burton Lauckhart	CRCM 57-7
King: Lake Washington	1 July 1975	Salvaged by J. Watson	UWBM 30068
Okanogan: Duck Lake	9 July 1983	Salvaged by J. Danielson	PSM 10418
Unknown: Crystal Lake	1 May 1935	Coll./Salv. by A. Williams	UWBM 10316